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NUMBER 1

THE FORSYTHIAS

FORSYTHIAS are among the most common of garden shrubs, and their early yellow blossoms are a boon to many a dreary garden which has looked lifeless a greater part of the winter. They were first introduced into America about 100 years ago. Probably no other hardy wood shrubs which have been introduced from the Old World into our gardens can equal or surpass the forsythias in cheerful beauty, which is developed at a season when there are comparatively few other competitors so attractive.

All the plants in this genus have yellow flowers which open in late March or early April before the leaves appear. All can be grown in many different types of soil and can withstand the tough, trying conditions of the city garden better than many other shrubs. Only one, the green-stem forsythia (*Forsythia viridissima*) has autumn color, and this is a lovely purplish red.

Unfortunately many public plantings of forsythias are sadly mutilated because of lack of intelligent care in pruning. Forsythias should be given plenty of room in which to grow and expand. They should not be crowded closely together for any reason except to make a good, dense bank planting where the whole object is to cover the ground. Many times when a single bush is used, it will be placed only two or three feet from a walk when actually it should be placed 8 to 10 feet from the walk, in order to give the plant plenty of room to expand fully at maturity. If the plants are pruned from the side, this necessarily cuts off the lovely drooping branches and spoils the entire effect, leaving only the unsightly base and a few branches ending prematurely in mid-air when they should be allowed to arch gracefully toward the ground.

Pruning. Forsythias should be pruned only after flowering. This is not because of anything peculiarly inherent in the plant itself, but simply because the flower buds are present all winter long, and if the plant is pruned before it flowers a large proportion of the buds would be needlessly destroyed before they have an opportunity to open. Consequently, it is always better to leave the plants alone until they have blossomed, and then, if necessary, do the required pruning. Also, after the flowers are gone the young shoots commence active growth, and such pruning as has been necessary will be considerably less apparent. It is usually best when pruning forsythias to leave as many of the graceful side branches as possible.

Fortunately, forsythias, like lilacs and privets, when necessary, can withstand the most severe pruning. As an example, this spring at the Arboretum it was necessary to cut off one of our bank plantings of forsythias to the ground, because it had become so overgrown that it was a physical impossibility to cut out only the dead wood. Because of the large amount of dead wood and the overgrown condition of the mass planting, the shrubs did not bloom nearly as well during the past few years as they should, thus requiring this drastic treatment. These plants will now sprout vigorously from the base and within two or three years will amply repay such extreme treatment by yielding a far superior crop of flowers.

Hardiness. Although the forsythias are classed as hardy, there is a limit to the endurance of such severe temperatures as we often experience in New England. The plants themselves may withstand lower temperatures than the flower buds. It is common, after a severe winter in New England, to see flowers only on those branches which have been protected by the snow during the winter, for it often happens that with temperatures of 15 to 20 degrees below zero, unprotected flower buds will be killed. This has often happened in the Arboretum. There is, however, one forsythia which apparently can withstand these lower temperatures and still bloom. This is the Korean forsythia, *F. ovata*, introduced by the Arboretum in 1917. *F. europaea* has also proved hardy, but its flowers are not as handsome as those of the other species.

Forsythia suspensa. The common type of this species is the variety *Sieboldii*, which is a shrub with very pendulous branches, often touching the ground and rooting at the tip. It was the first exotic forsythia introduced into Europe. It is a native of China and first reached the Netherlands in 1833. Now it is common in cultivation everywhere. There is the vigorous upright growing *Fortunei*, introduced from China in about 1860. In habit this is not nearly so droop-

ing as var. *Sieboldii* and cannot be substituted for it, particularly where it would be expected to cover arbors, walls, or to ramble over rocks. Another variety, *F. suspensa pallida*, must have originated prior to 1912 and is simply of value because it has flowers of a considerably lighter yellow than the other type. Although there are several other varieties known (*variegata*, *pubescens*, and *atrocaulis* with its young growth purplish in color), these are not sufficiently outstanding to be strongly recommended and are more tender than the type.

Forsythia viridissima. Robert Fortune is responsible for first sending this plant to Europe from the gardens of China in 1844. It is not as hardy in New England as the other species and often kills severely, even to the ground. It is upright in habit of growth, having the advantage of developing a rather good, dark red autumn color in the fall, a character which most of the other forsythias lack.

The manner in which these plants were first brought from Japan and China has been described in a most interesting way by Robert Fortune. In those days the trip from Japan to England was a long and tedious one around the Cape of Good Hope. The trip was not a matter of a few weeks, but one of four to five months. It was often difficult to keep seeds in a viable condition for that period of time, let alone cuttings and young plants. Then, too, if potted plants were taken there was the problem of protecting them against salt spray and of watering them over so long a period of time, for fresh water on sailing ships was limited.

This difficulty was surmounted by the early plant explorer by using one of the then new "Wardian" cases, which are now more commonly used in the form of solariums. These were simply pieces of glass sealed together so that no air or moisture escaped. Sufficient soil was placed in the base in which to plant the rooted cuttings or young plants. Just before the ship sailed, the plants were well watered and the cases sealed for the trip. In this way the water requirement was decidedly reduced, and even if the plants did occasionally need additional water this could easily be supplied. One of the most important factors was to see that the cases were carefully sealed, not so much to keep the moisture in, but to keep the salt water out. If a very small amount of salt water got in, it would result in serious injury. The sealed cases had to be placed where there was plenty of light, and according to Fortune, "large vessels with poops" were always to be preferred where there was any choice.

Probably more hardy than *F. viridissima* is its Korean relative, var. *koreana*, which was introduced by the Arboretum in 1919 through

seeds sent here by the Department of Forestry in Korea.

Forsythia intermedia. Since forsythias cross freely, hybrids often occur, and *F. intermedia* is one that has proved the most promising. It is a cross between the two Chinese species, *F. suspensa* and *F. viridissima*, originating in Europe shortly before 1880. It is considered superior to both its parents, particularly its very common variety *specabilis*, which has individual flowers $1\frac{1}{2}$ inches across. This can well be termed the most handsome of all the golden-bells because of its large, dark yellow flowers and the profuseness with which they are borne. It is extremely floriferous, and well-grown stems, 6 to 8 feet long, are literally covered along their entire length with the deep yellow flowers.

Two other varieties are of importance. The variety *primulina*, which originated in the Arboretum in about 1910, has the best pale yellow flowers of any forsythia. The variety *vitellina* is also considered good because of its deep yellow flowers. Since *F. intermedia* is a hybrid, it is sometimes confused with the Chinese species.

As an aid in distinguishing between these plants, two helps are given; a key reproduced from Rehder's *Manual of Cultivated Trees and Shrubs*, and illustrations showing the general outlines of the leaves of the different forms.

Key to Forsythias (After Rehder's *Manual*)

- A. Brs. hollow, with solid pith at the nodes: lvs. often 3-foliate
 - 1. *F. suspensa*
- AA. Brs. at least partly with lamellate pith.
 - B. Mature brts. greenish or brownish: lvs. elliptic-ovate to lanceolate.
 - C. Lvs. serrate, at least above the middle, only occasionally entire, 7-14 cm. long.
 - D. Pith usually solid at the nodes, wanting or lamellate between the nodes; lvs. on vigorous brts. sometimes 3-parted 2. *F. intermedia*
 - DD. Pith lamellate throughout, only at base of vigorous brs. wanting between the nodes: lvs. hardly ever 3-parted 3. *F. viridissima*
 - CC. Lvs. usually entire or with few shallow teeth, 5-8 cm. long, never 3-parted. 4. *F. europaea*
- BB. Mature brts. yellowish: lvs. ovate or broad-ovate, serrate, never 3-parted. 5. *F. ovata*



PLATE I

F. europaea

F. intermedia

F. viridissima

F. ovata

F. suspensa

Branches of five different Forsythia species showing normal leaf outlines. In identifying Forsythias, these illustrations should be used as an aid only, to the key on the opposite page.

Forsythia ovata. This Korean forsythia is a comparatively recent arrival, having been introduced into America by the Arnold Arboretum in 1917. E. H. Wilson found it growing in the Diamond Mountains in Korea. Although its flowers are smaller and not as numerous as are those of *F. intermedia*, it is the earliest to bloom and hardiest of all the forsythias and for this reason should be used in northern plantings where other species and varieties are subject to winter killing. Its leaves are rounded and ovate. It is not very dense in habit of growth, but eventually forms a well-rounded shrub, 6 to 8 feet tall. The very fact that it is the hardiest should make it valuable to the plant breeder.

Forsythia europaea. This is the only forsythia native of Europe and the only non-Asiatic species. It was first discovered in the mountains of Albania in 1897. The flower buds are proving rather hardy, but it has less ornamental value than any of the others.

NOTES

Friends of the Arnold Arboretum will be glad to note that the number of subscribers to its **Bulletin of Popular Information** is now larger than it has been for many years. Through this medium, the Arboretum is able to reach an ever increasing number of friends. We are always glad to send sample copies to interested individuals and invite our readers to call our attention to those who may profit from it. It is our desire to extend the usefulness of the Arboretum as much as possible.

For the benefit of those who did not subscribe to the 1936 issue in time to receive a complete set, there is still a limited number of the following numbers available at 15 cents each: Tree Troubles, The Flowering Crabapples, Just about Lilacs, Woody Plants with Ornamental Fruits, and Autumn Color. Address the Arnold Arboretum, Jamaica Plain, Massachusetts, for those you wish, enclosing the equivalent of the price in stamps.

Recent Bulletin subscribers for the year 1936 will automatically receive the Bulletin for 1937, since many 1936 issues are exhausted.

The Arnold Arboretum is actively cooperating in the revision of *Standardized Plant Names*, originally published in 1923 and since that time widely used by the horticultural industries. There are now approximately 15,000 new names to be added to the original 40,000 entries. While much detailed work is involved, it is hoped that the revised edition will be available by the first of next year.

DONALD WYMAN



PLATE II

Forsythia intermedia spectabilis

Forsythia ovata

This shows the difference in the size of the flowers between these two species. The flowers of *F. intermedia spectabilis* are the largest and the most profuse of any of the forsythias. The Korean forsythia (*F. ovata*) is the hardiest.

SPRAY PROGRAM AT THE ARNOLD ARBORETUM

	Spray Material	Amount to Apply	When to Apply
Scale insects	Miscible oil	1-15	Feb. 15 to early April
Evonymus scale	“ “	1-30 1-50	when plants are dormant in the summer
Pine-leaf scale	“ “	1-30	early April
Spruce-gall aphids	“ “	1-30	April 15
Larch case-bearer	Arsenate of lead	2 lbs.-50 gal.	when young are feeding
Golden oak scale	Miscible oil	1-15	early spring
Spring canker-worm	Arsenate of lead	2 lbs.-50 gal.	as soon as young appear
Willow leaf beetle	“ “ “	2 lbs.-50 gal.	early June, applied to under surface of the leaves
Lace-bug of Rhododendrons	Sunoco oil	1-70 1-60	as they hatch in the spring in August on a partly cloudy day when the temperature is not over 80°F.
Elm leaf-beetle	Arsenate of lead	3 lbs.-50 gal.	early June. A second spray may be necessary for a second brood
Red spider on evergreens	Sunoco oil	1-100	applied in summer as a fine mist on a cloudy day when temperature is not over 80° F.
White pine weevil			cut out borers and dead branches
Borers			dig out

L.V. SCHMITT

Because of many new subscribers who were unable to get a complete set of 1936 issues, this Spray Program is being reprinted from the 1936 Bulletin. Wherever a miscible oil is mentioned, recommendations have been based on Sunoco Oil only, which has proved satisfactory at the Arboretum.